CLAIMS

1.   A reversible multicolor recording medium
which comprises recording layers numbered from the first
to the nth, which are formed on a supporting substrate
side separately and independently in sequential order,
said recording layers each containing a reversible
thermal color developing composition differing from one
another in the hue of the developed color and further
containing a light-heat converting composition which
generates heat upon absorption of near infrared rays with
a wavelength in different ranges, and said recording
layers having respectively the absorption peak
wavelengths λ max 1, λ max 2, ..., λ max n, in the near
infrared region such that 1500 nm > λ max 1 > λ max 2 > ...
> λ max n > 750 nm.

2.   The reversible multicolor recording medium as
defined in claim 1, wherein the reversible thermal color
developing composition contains an electron-donating
color developing compound and an electron-accepting
developing-quenching agent and the recording layers
reversibly take on the color-developed state and the
color-quenched state due to the reversible reaction
between the electron-donating color developing compound
and the electron-accepting developing-quenching agent.

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3. The reversible multicolor recording medium as defined in claim 1, wherein the recording layer in its quenched state has a reflection density no higher than 0.6 at its developing peak wavelength.

4. The reversible multicolor recording medium as defined in claim 2, wherein the Nth recording layer (numbered upward from the supporting substrate) containing the light-heat converting composition has an absorbance of $Abs.N(\lambda)$ which satisfies the following relation.

$1.5 > Abs.N(\lambda_N) > 0.6$

$Abs.1(\lambda_1) > 0.6$

$Abs.N(\lambda_{N-1}), \ldots, Abs.N(\lambda_2), Abs.N(\lambda_1) < 0.2,$

where $N = 2, 3, \ldots, n$.

5. The reversible multicolor recording medium as defined in claim 1, wherein the following relation is satisfied between the absorption peak wavelength (λ max 1, λ max 2, $\ldots$, λ max n) in near infrared region of the first to nth recording layers and the oscillation center wavelengths ($\lambda_1 1, \ldots, \lambda_n$) of the laser beams to be directed to each recording layer.

$(\lambda \text{ max } N - 15 \text{ nm}) < \lambda_N < (\lambda \text{ max } N + 20 \text{ nm}),$

where $N = 2, \ldots, n$.

6. The reversible multicolor recording medium as

defined in claim 1, wherein the recording layer contains the light-heat converting composition and the reversible thermal color developing composition in their mixed state.

7.   The reversible multicolor recording medium as defined in claim 1, wherein the recording layer contains the light-heat converting composition and the reversible thermal color developing composition in the mutually separated state.

8.   The reversible multicolor recording medium as defined in claim 7, wherein the light-heat converting composition is separated by a resin binder.

9.   The reversible multicolor recording medium as defined in claim 1, wherein the top of the first to nth recording layers is covered with an upper recording layer which contains a reversible thermal color developing composition differing in hue from the first to nth recording layers and the upper recording layer does not contain the light-heat converting composition.

10.   The reversible multicolor recording medium as defined in claim 1, wherein the first to nth recording layers are formed on top of the other, with a heating insulating layer interposed between adjacent ones.

11.   The reversible multicolor recording medium

as defined in claim 1, wherein the recording layers number two to four layers.

12.   The reversible multicolor recording medium as defined in claim 11, wherein the recording layers number four layers and each of the recording layers has a hue selected form yellow, cyan, magenta, and black.

13.   The reversible multicolor recording medium as defined in claim 11, wherein the recording layers number three layers and each of the recording layers has a hue selected form yellow, cyan, and magenta.

14.   The reversible multicolor recording medium as defined in claim 1, wherein a protective layer is formed on the uppermost surface of the recording layers.

15.   The reversible multicolor recording medium as defined in claim 1, wherein the light-heat converting composition contained in the second to nth recording layers (excluding the first recording layer adjacent to the supporting substrate) contains an organic dye.

16.   The reversible multicolor recording medium as defined in claim 15, wherein the organic dye is at least one species of polymethine dye selected from phthalocyanine dye, naphthalocyanien dye, cyanine dye, squarilium dye, and croconium dye.

17.   A method for recording on a reversible

multicolor recording medium by irradiation with arbitrary selected laser beams whose oscillation center wavelengths (λ_1, λ_2, ..., λ_n) are in the range of 750 nm to 1500 nm, said reversible multicolor recording medium having recording layers numbered from the first to the nth, which are formed on a supporting substrate side separately and independently in sequential order, said recording layers each containing a reversible thermal color developing composition differing from one another in the hue of the developed color and further containing a light-heat converting composition which generates heat upon absorption of near infrared rays with a wavelength in different ranges, and said recording layers having respectively the absorption peak wavelengths λ max 1, λ max 2, ..., λ max n, in the near infrared region such that 1500 nm > λ max 1 > λ max 2 > ... > λ max n > 750 nm.

18. The method for recording on a reversible multicolor recording medium as defined in claim 17, wherein the source of the laser beams is a semiconductor laser.

19. The method for recording on a reversible multicolor recording medium as defined in claim 17, wherein the laser beams each have the oscillation center wavelengths (λ_1, λ_2, ..., λ_n), which are separate from each other by more than 40 nm.

20. The method for recording on a reversible multicolor recording medium as defined in claim 17, wherein the total number of the laser beams differing in the oscillation center wavelength is equal to the total number of the light-heat converting compositions which are contained in the first to nth recording layers so as to generate heat upon absorption of light in the mutually different regions of wavelength.

21. The method for recording on a reversible multicolor recording medium as defined in claim 17, wherein the Nth recording layer (numbered upward from the supporting substrate) containing the light-heat converting composition has an absorbance of Abs.N(λ) and the laser beams for recording have the oscillation center wavelength (λ_1, λ_2, ..., λ_n) such that the following relation is satisfied.

$1.5 >$ Abs.N(λ_N) > 0.6

Abs.1(λ_1) > 0.6

Abs.N(λ_{N-1}), ..., Abs.N(λ_2), Abs.N(λ_1) < 0.2,

where $N = 2, 3, ..., n$.

22. The method for recording on a reversible multicolor recording medium as defined in claim 17, wherein the following relation is satisfied between the absorption peak wavelength (λ max 1, λ max 2, ..., λ max n)

in near infrared region of the first to nth recording

layers and the oscillation center wavelengths (λ_1, λ_2,

..., λ_n) of the laser beams.

$\quad$ (λ max N - 15 nm) < λ_N < (λ max N + 20 nm),

$\quad$ where N = 2, ..., n.